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97-RF-00548

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CIRILLO, R. XX TRANSMITTAL OF THE QUARTERLY STATUS REPORT FOR THE CONSOLIDATED WATER TREATMENT FACILITY - AMT-013-97

Rocky Mountain Remediation Services is pleased to deliver the attached copy of the Quarterly Status Report for Work Package B891 Groundwater Treatment Facility, 1 in fulfillment of the scheduled milestone due January 31, 1997. The task includes operations, maintenance and reporting activities for the Consolidated Water Treatment Plant and 0U7 Passive Seep Interception and Treatment System.

If there is any additional information you would like to have incorporated into the existing format for next quarter's report or clarification of the current report, please do not hesitate to contact J. R. (Russ) Cirillo on extension 5876 or digital pager 4011.

Ann M. Tyson
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QUARTERLY REPORT
CONSOLIDATED WATER TREATMENT FACILITY
AND
OU7 PASSIVE SEEP INTERCEPTION AND
TREATMENT SYSTEM

FOR OCTOBER THROUGH DECEMBER 1996
INCLUDING DATA SUMMARY FOR
JULY THROUGH SEPTEMBER 1996

Rocky Mountain Remediation Services, L.L.C.

January 1997

January 31, 1997

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SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

1.0 INTRODUCTION

The CWTF went on-line February 29, 1996. The CWTF is designed as a comprehensive facility combining individual IM/IRA treatment activities in order to reduce cost, increase efficiency, and offer treatment options to the Rocky Flats Environmental Technology Site (RFETS) in support of on-going Environmental Restoration (ER) activities and remediations.

The Consolidated Water Treatment Facility (CWTF) consists of the following specific unit operations:

- Chemical precipitation (T-900A/T-900B)
- Cross-flow membrane microfiltration (T-900A/T-900B)
- Ultraviolet Light/Hydrogen Peroxide Oxidation (Building 891)
- Granular Activated Carbon (Building 891)
- Ion Exchange (Building 891)

A portable clay absorbent media drum is also available for use at the CWTF during water transfers from tanker trucks to CWTF influent storage tanks as a pretreatment of oily wastewaters. Waters are processed through the various CWTF unit treatment operations based on knowledge of the influent water characteristics in order to maximize treatment and reduce handling costs and waste generation.

The CWTF currently treats contaminated water from the following sources:

- OU1 groundwater and OU2 surface water
- Decontamination water from the Main Decontamination Facility and Protected Area Decontamination Facility
- Other ER waters (e.g., purge water, water pumped from containments, etc.)
- Waters from ER Accelerated Action Projects

The CWTF flowpath is flexible enough to allow waters to be treated through particular unit processes as necessary, and to allow for re-treatment if necessary.

2.0 CWTF OPERATIONS (OCTOBER, NOVEMBER, DECEMBER 1996)

2.1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2-1 summarizes the quantities of water treated at the CWTF for the period October through December 1996. During this period the CWTF accepted water from the following sources:

- OU1 French Drain Sump
- OU1 Collection Well
- OU2 Surface Water Station SW-59
- Snow melt/rain water pumped from CWTF containments
- GAC Rinse Water
- Water from the thermal desorption of soil from Trench T-3/T-4
- MDF Water

As can be seen from Table 2-1, a total of approximately 114,105 gallons of water were treated through the Building 891 Ion Exchange Columns during the October through December period. Approximately 23,965 gallons of the total water volume were treated through the chemical precipitation/microfiltration trailers.

TABLE 2-1
CONSOLIDATED WATER TREATMENT FACILITY
APPROXIMATE QUANTITIES OF WATER COLLECTED AND PROCESSED a/

Month/Year	Gallons Collected from French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from the MDF and Other Sources c/	Gallons Pumped from Bldg. 891 Contaminants	Gallons Collected from the OU2 SW-59 d/	Gallons Processed through T900A/T900B e/	Gallons Processed through GAC at Bldg 891	Gallons Processed through IX at Bldg 891
Jan-96	20,590	1,400	4,500 f/	2,421	5,840	0	0	36,925
Feb-96	21,224	1,420	8203 g/ 528 h/	500	5,765	8,220	0	27,363
Mar-96	31,864	1,730	3,321 g/	8,046	5,680	0	12,418	45,598
1st Quarter Totals	73,678	4,550	16,552	10,967	17,285	8,220	12,418	109,886
Apr-96	36,924	2,035	5,200 i/ 7,596 g/	4,612	5,940	7,700	7,770	73,000
May-96	23,184	1,710	2535 i/ 650 g/ 6,973 j/	16,360	6,620	8,867	41,467	61,557
Jun-96	11,592	1,435	8,218 i/ 22,331 k/	2,685	6,215	21,785	27,254	54,724
2nd Quarter Totals	71,700	5,180	53,503	23,657	18,775	38,352	76,491	189,281
Jul-96	5,884	1,590	32,505 k/ 1,990 i/	8,051	6,090	44,290	58,732	56,167
Aug-96	3,184	1,430	17,027 k/ 17,233 i/ 200 i/	4,031	4,055	37,286	44,384	41,330
Sep-96	4,143	830	9,750 k/	11,223	2,950	11,030	18,662	12,332
3rd Quarter Totals	13,211	3,850	78,705	23,305	13,095	92,606	121,778	109,829
Oct-96	2,740	1,255	325 i/	2,466	3,615	11,500	18,159 112,608 n/	27,958 63,690 o/
Nov-96	2,045	1,090	5,352 i/ 670 k/	3,207	2,860	12,465	19,298	9,722
Dec-96	2,828	1,130	86 m/	649	5,130	0	4,660	12,735
4th Quarter Totals	7,613	3,475	6,433	6,322	11,605	23,965	154,725	114,105
Year-to-Date Totals	166,202	17,055	155,193	64,251	60,760	163,143	365,412	523,101

a/ Please note that because the CWTF is equipped with Influent Tanks, the quantity of water collected will not necessarily equate to the quantity of water processed.

Also note that a 15,000 gallon surge tank (T-203) is in-line between the UV/GAC unit processes and IX #1, and therefore the quantity of water processed through UV/GAC will not equate to the quantity of water processed through IX.

b/ This ground water is collected each operating day (i.e., 5 days per week).

c/ Other sources may include purge water, ER Accelerated Action Project water, etc.

d/ For the first, second, and third quarters, this surface water was collected daily (i.e., 7 days per week) During the November and December of the fourth quarter, this water was collected approximately every three weeks.

e/ The OU2 FTU trailers T-900A/T-900B were operated at the CWTF for the first time on February 29, 1996.

f/ This water was potable water which was used during the tightness testing of CWTF Influent Tank T-200.

g/ This water was from the emptying and cleaning of Tank T-27/Tank T-40 (an ER Accelerated Action Project).

h/ This water was potable water used for OU2 trailer start-up/testing.

i/ This water was ground water or water accepted from the MDF.

j/ This water was thermal desorption water from Ryan's Pit (an ER Accelerated Action Project).

k/ This water was thermal desorption water from Trench T-3 and Trench T-4 (an ER Accelerated Action Project).

l/ This water was from the emptying of water from Tank #4 at IHSS 129 (an ER Accelerated Action Project).

m/ This water was generated by rinsing of new GAC.

n/ This water is the amount retreated through the GAC system.

o/ This water is the amount retreated through the IX system.

Please note that because the CWTF is equipped with three Influent Tanks, the amount of water treated may be less than or greater than the amount of water collected for any given period.

As of the end of December, 1996, approximately 3,662,922 gallons of water has been processed through the Building 891 Ion Exchange Columns.

During the period from October through December, 1996, no treated water was released.

2.2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF:

- Building 891
 - Hydrogen peroxide (UV oxidation)
 - Hydrochloric acid (ion exchange regeneration and pH adjustment)
 - Sodium hydroxide (ion exchange regeneration)
- T-900A/T-900B trailers
 - Sulfuric acid (pH adjustment: TK-1 and effluent; filter module chemical cleaning)
 - Calcium hydroxide (precipitation)
 - Ferric sulfate (precipitation)
 - Hydrogen peroxide (chemical cleaning of filter modules)
 - Sodium hydroxide (pH adjustment: TK-2)
 - Sodium hypochlorite (chemical cleaning of filter modules)

Table 2-2 summarizes the quantities of chemicals utilized during the period of October through December 1996.

2.3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T-900A/T-900B trailers:

- Building 891
 - used filter socks
 - neutralized ion exchange regenerant
 - personnel protective equipment
- T-900A/T-900B trailers
 - filter press sludge cake
 - personnel protective equipment
 - used filter membranes

Table 2-3 summarizes the types and quantities of the waste generated during wastewater treatment operations at Building 891 and the T-900A/T-900B trailers for the fourth quarter of 1996. Approximately 4,550 gallons of neutralized regenerant water from Tank T-210 was sent to the 374 evaporator for processing during the October through December 1996 period. The GAC vessel carbon was changed out and resulted in 20 drums of spent carbon. In addition, 5 drums of spent IX resin were generated during changeout of the IX-1 vessel in Building 891. Final characterization of this waste is pending analysis.

TABLE 2-2
CONSOLIDATED WATER TREATMENT FACILITY
CHEMICAL USAGE

Month/Year	Building 891			T-900A/T-900B					
	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)	Sodium Hypochlorite (gallons)
Jan-96	0.0	16.0	4.1	0.0	0.0	50.0	0.0	0.0	0.0
Feb-96	0.0	54.0	5.1	16.6	9.9	13.5	0.0	5.0	0.0
Mar-96	95.0	60.0	3.7	0.0	0.0	0.0	10.0	0.0	0.0
1st Quarter Totals	95.0	130.0	12.9	16.6	9.9	63.5	10.0	5.0	0.0
Apr-96	204.4	123.4	4.6	0.4	12.0	0.5	15.0	2.5	0.0
May-96	259.8	101.6	4.5	1.0	11.3	6.5	0.0	2.0	0.0
Jun-96	131.9	122.6	2.3	12.0	53.8	13.9	44.9	4.8	0.0
2nd Quarter Totals	596.1	347.6	11.4	13.4	77.1	20.9	59.9	9.3	0.0
Jul-96	210.6	152.8	9.2	13.7	275.9	19.5	24.8	8.4	0.0
Aug-96	391.8	193.0	0.4	12.3	215.9	17.5	31.3	4.5	0.0
Sep-96	0.0	0.0	2.8	3.8	50.0	7.5	15.0	1.0	0.0
3rd Quarter Totals	602.4	345.8	12.4	29.8	541.8	44.5	71.1	13.9	0.0
Oct-96	150.3	81.6	4.6	4.5	63.9	6.0	3.0	0.0	0.0
Nov-96	161.0	68.0	3.5	1.8	42.0	3.2	10.0	0.0	0.0
Dec-96	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
4th Quarter Totals	311.3	149.6	8.4	6.3	105.9	9.2	13.0	0.0	0.0
Year-to-Date Totals	1604.8	973.0	45.1	66.0	734.7	138.1	154.0	28.2	0.0

a/ In addition to the sulfuric acid quantity listed in this column, occasionally a small amount (approximately 1 gallon per effluent tank) of sulfuric acid is used in Building 891 for effluent pH adjustment.

TABLE 2-3
CONSOLIDATED WATER TREATMENT FACILITY
WASTE GENERATION

Month/Year	Building 891			T-900A/T-900B				Bldg 891/T-900A/T-900B	
	Filter Socks (55-gal drum)	Neutralized Regenerant to 374 (gallons)	Spent Media (drums)	Sludge Production (55-gal drum)	Spent GAC (pounds)	Used Filter Membranes (55-gal drum)	Personal Protective Equip. (55-gal drum) b/		
Jan-96	--	0	0	0	0	0	--		
Feb-96	--	0	0	0	0	0	--		
Mar-96	--	4,211	0	0	0	0	--		
1st Quarter Totals	0 d/	4,211	0	0	0	0	2 drums c/d/		
Apr-96	--	9,326	0	0	0	0	--		
May-96	--	2,670	0	0	0	0	--		
Jun-96	--	4,361	0	0	0	0	--		
2nd Quarter Totals	0 d/	16,357	0	0	0	0	2 drums c/d/		
Jul-96	--	8,986	0	0	0	0	--		
Aug-96	--	6,920	0	0	0	0	--		
Sep-96	--	4,399	0	0	0	0	--		
3rd Quarter Totals	0 d/	20,305	0	0	0	0	2 drums c/d/		
Oct-96	--	4,550	0	0	0	0	--		
Nov-96	--	0	0	0	0	0	--		
Dec-96	--	0	25 e/	0	0	0	--		
4th Quarter Totals	0 f/	4,550	25	0	0	0	2 drums c/d/		
Year-to-Date Totals	0	45,423	25	0	0	0	8		

a/ A Granular Activated Carbon unit was installed in Building 891 in February 1996.

b/ PPE is monitored for radiological contaminants, and if determined to be acceptable for unrestricted release, is sent to the Rocky Flats landfill for disposal.

Until the acceptance water from an ER Accelerated Action Project in February 1996, no PPE from Building 891 or the T-900A/T-900B trailers had been found to be radiologically contaminated.

c/ PPE is collected from water treatment operations, MDF decontamination operations, etc. and is drummed collectively.

d/ These drums are filled gradually, and therefore only quarterly totals are reported.

e/ Includes 20 drums of spent granular activated carbon and 5 drums of spent IX resin.

f/ Used filter socks are drummed with other compatible wastes generated onsite, therefore the drums generated cannot be tracked.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

3.0 INFLUENT AND EFFLUENT SAMPLING (JULY, AUGUST, SEPTEMBER 1996)

3.1 OU1 FRENCH DRAIN SUMP, COLLECTION WELL, AND BUILDING 881 FOOTING DRAIN CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water, and collection and treatment of water from the Building 881 Footing Drain was discontinued in September 1994. Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain. For the July, August, September 1996 period, quarterly sampling was performed at the French Drain Sump, the Collection Well, and the Building 881 Footing Drain.

VOCs, Radionuclides, Metals, and Water Quality for the French Drain Sump, the Collection Well, and the Building 881 Footing Drain have been reviewed and compared to the OU1 ARARs. Note that it has historically been assumed that the OU1 ARARs for radionuclides and metals are dissolved values. Those constituents which did exceed OU1 ARARs include the following:

FRENCH DRAIN SUMP

<u>Compound</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU1 ARAR</u>
Selenium (dissolved)	47.9	ug/L	10
Total Dissolved Solids	764	mg/L	400

COLLECTION WELL

<u>Compound</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU1 ARAR</u>
Tetrachloroethene	81	ug/l	5
Trichloroethene	520 D	ug/l	5
Selenium	758	ug/l	10

BUILDING 881 FOOTING DRAIN

<u>Compound</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU1 ARAR</u>
Tetrachloroethene	30	ug/L	5
Total Dissolved Solids	522	mg/L	400

The Building 881 Footing Drain is currently being sampled for both total and dissolved radionuclides and metals (refer to DOE letter ER:SRG:10199, dated September 29, 1994).

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

3.2 OU2 SURFACE WATER CHARACTERISTICS

Surface water is sampled on a quarterly basis from SW-59, SW-61, and SW-132. Although the Environmental Protection Agency and the Colorado Department of Public Health and the Environment authorized the discontinuation of the collection and treatment of SW-61 and SW-132 on April 24, 1994, the two surface water stations continue to be sampled to verify that no increase in contamination is occurring. Collection and treatment for SW-61 and SW-132 was discontinued on May 6, 1994. Presently only SW-59 water is collected and treated. Note that it has historically been assumed that the OU2 ARARs for radionuclides and metals are total values.

The data for OU2 surface water has been reviewed and compared to the relevant ARARs, those constituents which did exceed OU2 ARARs include the following:

SURFACE WATER STATIONS: SW-59, SW-61, and SW-132

<u>Compound</u>	<u>Stations</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU2 ARAR</u>
Carbon Tetrachloride	SW-59	40	ug/L	5
Chloroform	SW-59	8	ug/L	1
Tetrachloroethene	SW-59	18	ug/L	1
Trichloroethene	SW-59	26	ug/L	5
Vinyl Chloride	SW-61	3	ug/L	3

<u>Compound</u>	<u>Stations</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU2 ARAR</u>
Aluminum	SW-59	372	ug/L	200
Iron (dissolved)	SW-61	643 B	ug/L	300
Zinc	SW-59	138	ug/L	50

3.3 TREATED EFFLUENT CHARACTERISTICS

Effluent Storage Tank is sampled once it is full, and the tank is discharged if the data show that ARARs have not been exceeded.

No treated water was discharged from the Effluent Storage Tanks during the fourth quarter of 1996.

4.0 ENVIRONMENTAL COMPLIANCE

Periods of Non-Collection: OU2 SW-59

On October 7, 1996 a drip of water was detected leaking from the level indicating gauge. A fitting was tightened and the leak was stopped. The incident was reported per site RCRA requirements. The area was monitored for VOC's during cleanup and the contaminated soil was removed and sampled according to the RCRA contingency plan. The estimated quantity of the release was less than one gallon.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

5.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Drain Sump will continue as normal. Water from the Collection Well will continue to be collected in the OU1 trailer-mounted container and transported to the CWTF for off-loading and treatment. Purge, incidental, and decontamination pad waters will continue to be accepted and treated.

Collection of SW-59 weir water into T-59 (the double-walled tank located just south of the SW-59 weir box) began on September 30, 1996. This collected water is now periodically transported to the CWTF via tanker truck.

The CWTF will continue to accept and treat waters from ER Accelerated Action Projects.

Retreatment and release of water from effluent tanks T-207 and T-206 will be a high priority. These tanks contain treated waters from the T3/T4 project and have not yet met discharge standards. Completion of the retreatment was originally delayed by maintenance activities. It is expected that these waters will meet standards after the second treatment is complete.

SECTION B - OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM

6.0 INTRODUCTION, OPERATIONS, AND SAMPLING

The OU7 Passive Seep Interception and Treatment System (PSITS) is designed to collect and treat OU7 seep water and thereby eliminate, to the extent practicable, the discharge of the FO39-listed waste contained in this seep water to the East Landfill Pond. The collection and treatment system is comprised of the following items:

- A seep interception system.
- A settling basin to remove total suspended solids.
- A bag filtration system consisting of two filters operated in parallel (currently 25 micron bags are in use in the system).
- Two 55-gallon drums of granular activated carbon (GAC) are operated in series to remove volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).

Obtaining and maintaining smooth operation of the OU7 PSITS has been challenging due to the rapid build-up of sediments in the filter socks, air-binding of the system due to the addition of hydrogen peroxide, the small system head differential, and occasionally increased flow to the system due to storm events and seasonal variations. Since the beginning of June 1996, hydrogen peroxide has not been added to the system in an attempt to eliminate the persistent air-binding problem. Hydrogen peroxide was not added to the system during the fourth quarter.

During the fourth quarter of 1996, the bag filters were changed out as necessary. The bag filters were changed out in October as part of routine operations. During the period from December 24 through December 29, however, the bag filters were changed out three times due to low flow situations which appeared to have been caused by a clay-like material clogging the filters. The system will be closely monitored and maintenance efforts coordinated, as necessary.

Two spent GAC drums were replaced with new drums filled with virgin carbon in October 1996. An existing drum was configured as the lead unit with one new drum placed in the lag position and the third drum maintained in the standby position.

A lead GAC sample and an outfall sample were taken on September 13, 1995. There were no exceedances with the sample results for the effluent showing all compounds as nondetect except chloroethane at 23 ug/L and vinyl chloride at 2 ug/l.

The effectiveness of GAC drum series operation will continue to be monitored. EPA will be notified immediately in any instance where by-pass continues longer than 72 hours. Periods of bypass less than 72 hours will be documented in this report.

During the inspection on December 22, 1996, a corrosion leak was observed from the lead GAC canister into the secondary containment of the system. Operators isolated the leak immediately by placing the system in bypass configuration. The water in the secondary containment was removed the following day (within 24 hours). Repairs were made to the system and it was placed back on-line on December 23, 1996. Although the system was in bypass mode for approximately 26 hours, bypass only occurred for approximately 30 minutes (during repair activities on December 23) when the influent capacity of the settling basin was no longer adequate to hold the influent volume.

Appendix A
Data Qualifiers and Descriptions

Selected Laboratory Data Qualifiers and Descriptions

<u>Qualifier</u>	<u>Description</u>
B	< method detection limit but >= instrument detection limit (INORGANIC)
B	Analyte found in blank and sample (ORGANIC)
D	Compound identified using secondary dilution factor (ORGANIC)
E	Concentration exceeds calibration range of instrument (ORGANIC)
E	Estimated due to interference (INORGANIC)
J	Estimated value, < sample's detection limit
N	Spiked recovery not within control limits (INORGANIC)
S	Determined by MSA (INORGANIC)
U	Undetected, analyzed for but not detected
W	Post-digest sample outside of control limit (INORGANIC)

Selected Data Validation Qualifiers and Descriptions

<u>Qualifier</u>	<u>Description</u>
A	Data is acceptable, with qualifications
JA	Estimated, acceptable
R	Data is rejected
V	Data is valid
Y	Analytical results in validation process
Z	Validation was not requested or performed